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AUTHOR Harris-Bowlsbey, JoAnn
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ABSTRACT

Computer-based career planning systems have been a reality for 25 years. Over this time span, the technology has changed dramatically--from very expensive, slow, low-storage mainframe computers to low-cost, fast, high-storage microcomputers. Similarly, the presentation made possible by the technology has changed from screens without color packed with text to screens with color, high-resolution graphics, and less text. However, the basic content of comprehensive computer-based career planning systems has changed far less. The first component is a hidden skeleton or outline which expresses the developer's concept of what individuals need in order to accomplish developmental tasks or make informed career decisions. The second component is assessment tools. Assessment data may be acquired by taking inventories on-line or entering results from print form inventories. The third component is databases. These are files of frequently-updated and accurate information about such things as occupations, schools, financial aid, etc. The fourth component is search strategies to help users quickly identify options as well as get detailed information about them. By modifying any or all of these components, substantially different systems can be assembled for a broad variety of populations and settings.(ABL)

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ERIC Clearinghouse on Counseling and Personnel Services

2108 School of Education
The University of Michigan
Ann Arbor, Michigan 48109-1259

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Building Blocks of Computer-Based Career Planning Systems

JoAnn Harris-Bowlsbey

Introduction

Computer-based career planning systems have been a reality in the United States for 25 years. They had their genesis in the late 1960s, funded by state, federal, and foundation grants. Their development was forged by a handful of significant developers who learned how to harness the technology of interactive mainframe computing to assist individuals with career development and decision making.

Over the span of the 25 years, the technology that delivers computer-based career planning systems has changed dramatically—from very expensive, slow, low-storage mainframe computers to low-cost, fast, high-storage microcomputers. Similarly, the presentation made possible by the technology has advanced—from screens without color packed with text to screens with color, high-resolution graphics, and less text. Indeed, the decade of the 90s offers the capability of full multimedia presentation, combining text, audio, graphics, still pictures, and full-motion video.

While the technology has continued to expand in capability and decline in cost, the populations receiving service from computer-based systems have also continued to expand. The original systems were designed and delivered for high school and community college students. Later development expanded such systems to the middle school years and to the university years. Even more recently, developers have released systems for the adult years, both for career transition and development in the middle adult years, and for retirement planning in the later adult years. Currently, some developers are working on systems for the elementary school years. With the completion of these, systems will exist which offer assistance across the total life span to individuals as they face and make choices related to school, work, and other life roles. With the diversity of systems has also come diversity of settings in which they are placed. In addition to schools, colleges, and universities, computer-based career planning systems are now also commonly used in private counseling settings, military posts, libraries, organizations, and homes.

While both technology and setting for computer-based systems have changed tremendously over their relatively-short lifespan, the basic content of systems has changed far less. If each of the comprehensive systems currently available were analyzed in regard to content, four distinct components could be identified. A computer-based system for any age level, provided in any setting, or delivered by any technology is a unique blend of these four components.

Components of Comprehensive Computer-Based Career Planning Systems

The **first component** is a hidden skeleton, or outline, of the system which expresses the developer's concept of what individuals need in order to accomplish developmental tasks or make informed career decisions. Complex or simple as this outline may be, it usually involves activities designed to assist the user to learn more about self (interests, abilities, and/or values); to relate this self-information to available occupational options; to teach and apply good decision-making principles to the making of choices; and to provide significant databases that represent options for further education, job placement, or other implementation steps. A study of the main menu of a computer-based system, or of the sequence of activities in it, will reveal the theory of the developer about how people make decisions or can be helped to do so.

The basic outline of a system is often embroidered by a significant amount of instructional material which is needed to support the theoretical structure. Such material may include instruction about how occupations are organized, how planful decisions can be made, how life roles interact with each other, how transitions can be mastered, or how jobs can be found. This content is delivered by presentation of text or by structured exercises.

The **second component** of computer-based career planning systems is assessment tools. These are necessary in every system as a way to acquire data about the user (interests, abilities, experiences, personality type, and/or values) in order to create the linkage between that user and possible occupational options. The assessment data may either be acquired by taking inventories on-line, or by entering the results of having taken them in print form. Given a well-researched organizational structure for occupations and a sound research base on assessment tools, it is possible to take into a computer system results from a very wide range of interest inventories, abilities measures, and values inventories. The system then applies algorithms that serve as a common denominator to link characteristics of the user to characteristics of occupations in general, or positions in a specific organization.

The **third component** of computer-based career planning systems is databases. These are files of frequently-updated and accurate information about objects of the user's choice—occupations, schools, military programs, programs of study, financial aid opportunities, apprenticeships, and employers. They are simply structured files of elements of data that people

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need in order to make well-informed decisions. They are presented in organized topics, via text and graphics in the past, complemented with audio and visuals in the future.

The **fourth component** of computer-based career planning systems is search strategies. The challenge of decision making is to reach into a pool of options and identify those that are worthy of further investigation and perhaps choice. If users of computer-based systems can identify and prioritize those characteristics that they value most, search strategies can allow users to identify options that qualify quickly. The difficult part is to identify meaningful characteristics and to code options accurately by those characteristics. Search variables are needed for all of the databases in the system so that users can identify options as well as get detailed information about them.

Making New Systems Out of Components

The previous section defined four basic components of a computer-based career guidance system—structure, assessment tools, databases, and searches. By modifying any or all of these, substantially different systems can be assembled for a broad variety of populations and settings. Using the basic structure of a comprehensive career planning system, the author has developed unique systems for specific organizational settings, such as the United States Postal Service or the State of New York; for other countries, such as Canada and Spain; and for diverse settings, such as military posts and universities. This is possible because the basic structure, or process, of career guidance is the same regardless of setting or user age. Thus, the basic logic and flow of the system can be maintained while the text that surrounds or explains that process can be written at different reading levels within different contexts, and in different languages. Further, the graphics that enhance the text can be modified to adapt to the age level, setting, and graphic boards of the end-user sites.

The second component—assessment instruments—can also be adapted for different settings and cultures if research is performed to link the results into a common organizing principle, such as ACT's World-of-Work Map (Prediger, 1981). The latter is a system for classifying all occupations, positions unique to an organization, and programs of study. Thus, if the result of any interest inventory, abilities measure, or work values inventory can be linked to the World-of-Work Map, "regions" of occupations, positions, or programs of study can be suggested to the user for serious consideration.

Given, then, the World-of-Work Map as a generic organizational structure for user self-information and user options, the assessment instruments of choice in a given setting, organization, or country can be substituted in the generic career guidance system to make it uniquely useful in that setting, organization, or country.

The third component—data files—can be modified for a specific population in number, reading level, topics addressed, quantity of data about each entry in the file, and/or language. This fact provides a great deal of versatility in system content and makes systems unique to a particular setting. Due to the ease of changing this component, position descriptions unique to an organization can be easily added to a system and accessed by means of user self-variables (interest, skills, job preferences, etc.) due to the common linkage of assessment results and positions to the World-of-Work Map.

Finally, the fourth component—search variables—can also be easily modified to meet the needs of a particular target population or database. For example, employees in an organization requesting a customized system may benefit from searching a file of positions in the organization by interests, skills, experience level, salary grade, location of work, and projected demand. As another example, a customized state career information delivery system (CIDS) might need the addition of state-specific files of apprenticeship sponsors, financial aid opportunities, and career technology schools. Search variables for such files need to be identified which will both be helpful to the user in searching the file and supported by available data.

Conclusion

In conclusion, a computer-based career guidance system built on a sound structure that supports career choices and development can be a many-splendored thing for multiple settings, populations, and cultures. This is accomplished by the ability to change its text, graphics, assessment inventories, databases, and search variables, thus creating systems with significantly different content and appearance delivered by a common "engine."

Reference

Prediger, D. J. (1981). Mapping occupations and interests: A graphic aid for vocational guidance and research. *Vocational Guidance Quarterly, 30,* 21–36.

JoAnn Harris-Bowlsbey, Ph.D., is Executive Director of the ACT Educational Technology Center in Hunt Valley, Maryland.

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